International Day Against Drug abuse and Illicit Trafficking—26 June

United Nations Decade against Drug Abuse 1991–2000

DESTROYING DRUG CROPS WITHOUT HARMING THE ENVIRONMENT

"World annual production of just one narcotic drug—cocaine—has recently been estimated to be. . . more than enough to provide a daily dose for every human being on earth," says a United Nations report released in October 1990.

"Illicit drug production and consumption figures continue to soar," the report adds, and defines drug abuse, production, supply and trafficking as major problems facing mankind.

To fight this scourge, the United Nations is evaluating new technologies for the environmentally safe eradication of narcotic crops—coca, the opium poppy and cannabis—for future application by interested parties.

To further such technologies, the United Nations convened at Vienna in December 1989 a Meeting of Experts on Environmentally Safe Methods for the Eradication of Illicit Narcotic Plants. The meeting was attended by experts from 10 countries and by representatives of several international organizations.

SOCIO-ECONOMIC ASPECTS

Strictly speaking, socio-economic aspects were beyond the terms of reference of the meeting. But several experts insisted that they be discussed, to draw attention to the difficulties that eradication strategies could face.

To counter the cultivation of drug crops, the social, cultural and economic dimensions of the problem must be considered, the experts said. The eradication of drug crops should be accompanied by crop substitution and rural development programmes to improve living conditions.

Persuading farmers that they can make a good living without resorting to narcotic crop cultivation requires the adoption of commercial and trade measures to improve their market opportunities. As long as the real factors underlying drug production are not recognized, the roots of the problem will not be properly attacked.

ENORMOUS IMPACT ON THE ENVIRONMENT

In the last 10 years, narcotic crop production has greatly increased, the experts stated. Production figures available to the international community probably vastly underestimate the scale of the problem. Its seriousness can be seen for instance in the case of Peru, where the area devoted to growing coca rose from 13,000 hectares in 1972 to more than 200,000 hectares in 1989.

Coca production has an enormous impact on people and on the environment. In Peru alone, an estimated 30,000 tonnes of sulphuric acid, 2,000 tonnes of calcium carbonate and 50 million litres of kerosene are used annually to produce basic coca paste. All of this is discharged into streams and rivers in the processing areas. Human exposure to both extractants and pesticides results in severe health problems.

Growers also indiscriminately use up to 3,500 tonnes of pesticides—mainly insecticides—every year. This is much more than the amount of herbicides that would be needed to eradicate all of the coca in Peru, the experts noted.

The impact on the environment is huge: loss of species diversity, soil erosion, destruction of forests to create coca plantations, and the contamination of soil, water and air by extraction chemicals, pesticides and smoke from the burning of cut-down forests.

Opium poppy cultivation causes similar damage to vital ecosystems. And cultivation is probably increasing.

CHEMICAL CONTROL

In the last 10 years, world-wide efforts to develop safe chemical and biological agents for plant

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eradication have greatly advanced, the experts said. Many of the agents developed have found successful practical application in various areas of agronomy, including the restoration of environmental balance.

Herbicides that are both highly effective and environmentally safe are now available. And biological control has progressed to the point where there is a real potential for developing agents suitable for destroying narcotic crops.

Certain chemicals have been proved effective in controlling cannabis. Others are widely used against the opium poppy. When used properly, according to manufacturers' specifications and national guidelines, these herbicides have a low negative environmental impact.

Field trials of two herbicides—tebuthiuron and hexazinone—have shown that coca could for the first time be controlled in an environmentally acceptable way. These chemicals have given excellent results, at relatively low rates, when applied as granules.

Studies have shown that, after tebuthiuron treatment, regeneration of grass and herbs is rapid and vigorous. Some 16 species belonging to 11 plant families have regenerated during the studies, suggesting low environmental hazard. And there has been no sign of toxic effects on vegetation bordering the treated coca plantation. Such herbicides offer exciting potential for coca eradication, the experts said.

A dye commonly used as a pharmaceutical colourant and in cosmetics may become a new control agent for cannabis. The dye has been proved effective when applied through nozzle blowers and aerosol sprays. Field trials using spray equipment mounted on helicopters have confirmed its suitability. The dye seems to have little effect, other than some leaf browning, on non-targeted plant species.

BIOLOGICAL CONTROL

Biological agents are equally promising. Among them is a moth which is a common pest of coca in Peru and Colombia. The larva of this moth is a voracious feeder on coca leaves and is a major reason for heavy use of insecticides by coca growers. The moth completes its life cycle in 30 days and breeds repeatedly throughout the year. These characteristics suggest a great potential as a biocontrol agent for coca.

Earlier studies under the aegis of the UN Division of Narcotic Drugs have identified several fungal pathogens. More than 40 such fungi are found on cannabis and coca, and more than 30 on the opium poppy. Several have characteristics which suggest value as biocontrol agents. Two of them might for instance be used against cannabis.

The development of agents with specific characteristics is being studied. In the case of insects, as strains resistant to insecticides are probably developing naturally, there is a good chance of achieving this by selection and rearing in the laboratory. Other characteristics, such as high fecundity, can also be selected.

Technology can greatly improve the effectiveness of fungi. Besides methods to isolate strains of high virulence, simple mutations and adaptations as well as fusion techniques offer great opportunities.

For example, a lethal fungal pathogen of over 40 weed species and of many crops has been manipulated to produce a strain which has an absolute need for cytosine, without which it cannot survive, thus offering an excellent eradicating agent with precise control possibilities. When applied with cytosine, the strain kills plants in the target area; without cytosine it is inactive and cannot spread to other areas from the site where applied.

A second strain does not produce sclerotia—resistant structures essential to withstand winter—or spores, which are necessary for dispersal. Thus, when applied, this strain kills plants in the target area but does not spread beyond it, and then dies during the winter. Such organisms are very effective as herbicides and have a low impact on the environment since they are short-lived and do not go beyond the target area.

HIGH POTENTIAL

To counter the environmental damage resulting from drug cultivation and production, the experts recommended that the United Nations promote the use of various eradication technologies as one approach to reducing illicit supply.

Concerns about the environmental risks should be seen in a wider context. Drug plant production and processing have a much greater impact on the environment, and on human health, than the methods applied in any eradication programme. Careful application of approved herbicides by properly trained staff will ensure a very low environmental impact, the experts concluded.

Also, biological control can greatly contribute to eradication programmes, the experts said. Biological methods must be promoted, though it is recognized that they will not replace the use of herbicides in some situations.

But the high potential of biological control can be realized only if an effective research programme is established. Such a programme must consider agents already known, and search for new ones among insects and fungal pathogens.

The experts recommended the creation of an international research project containing a comprehensive range of coordinated research programmes. This approach, involving international organizations and institutions with the support of the United Nations, provides a good basis for developing research programmes, including field trials, at various locations. The UN Commission on Narcotic Drugs in February 1990 took note of the experts' recommendations.

The need for drug eradication programmes safeguarding human health and preserving the ecosystem was also stressed in the Declaration of the World Ministerial Summit to Reduce the Demand for Drugs and to Combat the Cocaine Threat, organized by the United Kingdom in association with the United Nations in London in April 1990.

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